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09/900,049	07/09/2001	Keiichi Shimizu	210101US2	3900

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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.  
1940 DUKE STREET  
ALEXANDRIA, VA 22314

EXAMINER
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DANIEL JR, WILLIE J

ART UNIT	PAPER NUMBER
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2686

DATE MAILED: 07/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/900,049

Applicant(s)

SHIMIZU ET AL.

Examiner

Willie J. Daniel, Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 15-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### DETAILED ACTION

1. This action is in response to applicant's RCE amendment filed on 13 April 2005. **Claims 15-29** are now pending in the present application.

#### *Continued Examination Under 37 CFR 1.114*

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 13 April 2005 has been entered.

#### *Claim Rejections - 35 USC § 112*

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**Claims 15, 28, and 29** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding **Claim 15**, the claim recites the feature "...when the double registration is **restored**," in lines 9-10 of the claim. According to the specification on pg. 16, lines 1-6, the specification states "...**performs** a double regional registration". The Examiner respectfully requests the applicant to claim the invention as supported by the instant application, clarify

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the claim language, and provide the page(s) and line(s) and/or drawing(s) that support the claimed features of the instant application to help resolve current issue(s).

Regarding **Claim 28**, the claim recites the feature "...its agent..." in line 2 of the claim on pg. 7. The claim has multiple types of agents (e.g., home agent, gateway foreign agent, previous foreign agent, and new foreign agent) recited in the claim in which the term "...its..." is not clearly defined in the claim(s) or instant application. Applicant is advised to provide the exact terminology that relates to the claimed invention of the instant application instead of using the term "its".

Regarding **Claim 29**, the claim recites the feature "...its agent..." in line 9 of the claim. The claim has multiple types of agents (e.g., home agent, gateway foreign agent, previous foreign agent, and new foreign agent) recited in the claim in which the term "...its..." is not clearly defined in the claim(s) or instant application. Applicant is advised to provide the exact terminology that relates to the claimed invention of the instant application instead of using the term "its".

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

**Claim 22-23** provides for the use of "mobile IP network", but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process

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applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

**Claim 22-23** is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

5. This list of examples is not intended to be exhaustive.

#### ***Claim Objections***

6. **Claims 15-17, and 28-29** are objected to because of the following informalities:

- a. **Claim 15** recites the limitation “the double registration” in lines 9-10 of the claim.

There is insufficient antecedent basis for this limitation in the claim and the claim is being considered as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner interprets as “doubly register” as stated in lines 5-6 of the claim. Also, the Examiner requests the applicant to be consistent and use the exact terminology as applicable.

- b. **Claim 16** recites the limitation “the double registration” in lines 9-10 of the claim.

There is insufficient antecedent basis for this limitation in the claim and the claim is being considered as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner

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- interprets as “doubly register” as stated in lines 5-6 of the claim. Also, the Examiner requests the applicant to be consistent and use the exact terminology as applicable.
- c. **Claim 16** recites the limitation “when the double registration,” in lines 9-10 of the claim. The Examiner requests clarification of the limitation as applied to the step of “...determining...when the gateway....when the double...,”.
- d. **Claim 17** recites the limitation “the double registration” in lines 2-3 of the claim on pg. 4. There is insufficient antecedent basis for this limitation in the claim and the claim is being considered as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner interprets as “doubly register” as stated in lines 5-6 of the claim on pg. 3. Also, the Examiner requests the applicant to be consistent and use the exact terminology as applicable.
- e. **Claim 17** recites the limitation “...when the double registration,” in lines 2-3 of the claim on pg. 5. The Examiner requests clarification of the limitation as applied to the step of “determining...when the gateway....when the double...,”.
- f. **Claim 17** recites “completer” in line 10 of the claim on pg. 4. The Examiner interprets as “completed”.
- g. **Claim 28** recites the limitation “the previous foreign agent” and “the new foreign agent” in lines 1-2 of the claim on pg. 7. There is insufficient antecedent basis for this limitation in the claim and the claim is being considered as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- h. **Claim 29** recites the limitation “**the** previous foreign agent” and “**the** new foreign agent” in lines 7-8 of the claim. There is insufficient antecedent basis for this limitation in the claim and the claim is being considered as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Appropriate correction is required.


- 7. Regarding **Claims 22-27**, note that the use of “*protocols*” (for example, Bluetooth and 802.11), protocols and standards change over time, hence, it is inappropriate to have the scope of a claim change with time. Since organizations implementing standards meet regularly and have the authority to modify standards, any connection a claim may have to these standards may vary scope over time. The other aspect arising from this is enablement. If the standard changes, the disclosure may no longer support the limitation. If the scope of the invention sought to be patented cannot be determined from the language of the claims, a second paragraph rejection is appropriate (In re Wiggins, 179 USPQ 421).

- a. **Claim 22** recites “**radio access network standards**” in line 2 of the claim, “**mobile IP procedure**” in line 3 of the claim, and “**SRNC relocation procedure**” in lines 5-6 of the claim.
- b. **Claim 23** recites “**radio access network standards**” in line 2 of the claim, “**mobile IP procedure**” in line 3 of the claim, and “**SRNC relocation procedure**” in lines 5-6 of the claim.

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- c. Dependent claims **24-27**, recite “**mobile IP procedure**” and/or “**SRNC relocation procedure**” as recited in the independent claim 22. Applicant appears to be relying on and claiming standard procedures to provide novelty.
8. This list of examples is not intended to be exhaustive. The Examiner respectfully requests the applicant to review all claims and clarify the issues as listed above as well as any other issue(s) that are not listed.

***Specification***

9. The disclosure is objected to because of the following informalities:
  - a. Applicant on pg. 37, line 22 has step “” of Fig. 11. Examiner suggests providing the other step characters as shown in drawing(s) (e.g., Fig. 11) which lead up to and follow the indicated step or remove the step from the specification.

Appropriate correction is required.

10. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: “Real-Time and Non-Real-Time Traffic Handoff Method and Agent Apparatus”.

11. This list of examples is not intended to be exhaustive.



***Claim Rejections - 35 USC § 103***

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 15, 18, 20, 22, 25, and 27** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Chen et al.** (hereinafter Chen) ("**Some Mechanisms To Improve TCP/IP Performance Over Wireless and Mobile Computing Environment**", July 04, 2000) in view of **Lee (US 6,539,225 B1)**.

Regarding **Claim 15**, Chen discloses a method of performing a handoff when a mobile host (MH) which reads on the claimed "mobile terminal equipment" is moving from a base station (BS1) which reads on the claimed "previous foreign agent" to a base station (BS2) which reads on the claimed "new foreign agent" in a mobile IP network (see Figs. 1 and 6), the method comprising the steps of:

when starting a handoff additionally performing a regional registration of the mobile terminal equipment (MH) to a home agent performing bicasting (e.g., multicast) and buffering so as to doubly register an address of the mobile terminal equipment (MH) by the previous foreign agent (BS1) and the new foreign agent (BS2) (see pg. 442, left col., lines 18-38, 47-51; pg. 442, right col., lines 9-13; Fig. 6), where the mobile host (MH) has an established connection registered between both base stations (BS1, BS2) during handoff for the home agent to tunnel packets to the base stations (BS1, BS2);

determining whether or not an IP packet is of real-time traffic (e.g., real-time packet) when the home agent receives the IP packet destined for the mobile terminal equipment (MH) when the double registration is restored (see pg. 440, left col., lines 33-48; pg. 441, left col., lines 27-28; pg. 442, left col., lines 42-62; Fig. 6), where the real-time traffic is routed to the mobile host while registered with both base stations in which the datagram has a bit field to indicate the packet is real-time packet,

bicasting (e.g., multicast) the IP packet of real-time traffic to both the previous foreign agent (BS1) and the new foreign agent (BS2) (see pg. 440, left col., lines 33-48; pg. 442, left col., lines 42-44; pg. 442, left col., line 59 - right col., line 15; pg. 444, left col., lines 4-8; Fig. 6), where packets that are the real-time traffic are multicasted, and

buffering the IP packet of non-real-time traffic to the home agent (see pg. 440, left col., lines 33-48; pg. 442, left col., lines 42-58; pg. 444, left col., lines 4-8; Fig. 6), where the packets of non-real-time traffic are buffered; and

when the IP packet of non-real-time traffic is buffered, transferring the IP packet of non-real-time traffic to the foreign agent (BS2) having the mobile terminal (MH) equipment by the home agent (see pg. 440, left col., lines 33-48; pg. 442, left col., lines 20-28, 42-58; pg. 444, left col., lines 4-8; Fig. 6), where the packets of non-real-time traffic are buffered in which packets for the mobile host (MH) are tunneled to the base station (BS2). Chen fails to disclose having the feature when the handoff is completed, requesting updating of the regional registration to the home agent so as to perform the regional registration only for the new foreign agent. However, the examiner maintains that the feature when the handoff is completed, requesting updating of the regional registration to the home agent so as to

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perform the regional registration only for the new foreign agent was well known in the art, as taught by Lee.

In the same field of endeavor, Lee discloses the feature when the handoff is completed, requesting updating of the regional registration to the home agent (26) so as to perform the regional registration only for the new foreign agent (34) (see col. 5, line 53 - col. 6, line 29; Figs. 1-2, 3 "ref. S6"), where the mobile wireless node (14) is deregistered from the old foreign agent (28) when handoff is completed.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Chen and Lee to have the feature when the handoff is completed, requesting updating of the regional registration to the home agent so as to perform the regional registration only for the new foreign agent, in order to provide seamless data network telecommunication service to a mobile wireless node during mobile wireless call handoff from a first radio base station to second radio base station, as taught by Lee (see col. 2, lines 34-39).

Regarding **Claim 18**, the combination of Chen and Lee discloses every limitation claimed, as applied above (see claim 15), in addition Chen further discloses the method according to claim 15, wherein said home agent determines whether or not an IP packet destined for said mobile terminal equipment (MH) is of real-time traffic (1) based on information on a header of the IP packet (see pg. 441, left col., lines 25-29; pg. 442, left col., lines 20-27; Fig. 4), where the packet has a packet type field that indicates that the packet is a real-time packet.

Regarding **Claim 20**, the combination of Chen and Lee discloses every limitation claimed, as applied above (see claim 15), in addition Chen further discloses the handoff method according to claim 15, wherein the home agent determines whether or not an IP packet destined for said mobile terminal equipment (MH) is of real-time (1) traffic based on information on a header of the IP packet, which is placed in a payload of the IP packet (see pg. 441, left col., lines 25-29; pg. 442, left col., lines 20-27; pg. 439, right col., lines 50-53; Figs. 2, 4), where the packet has a packet type field that indicates that the packet is a real-time packet.

Regarding **Claim 22**, the combination of Chen and Lee discloses every limitation claimed, as applied above (see claim 15), in addition Chen further discloses the method according to claim 16, wherein said mobile IP network is a wireless network which reads on the claimed "cellular phone network" in accordance with Radio Access Network standards which can perform a mobile IP procedure, said mobile terminal equipment (MH) is a mobile host (MH) which reads on the claimed "cellular phone", and each of said new and the previous foreign agents (BS1, BS2) is a base station (BS1) which reads on the claimed "radio network control unit" that can give and receive an authority to control said cellular phone (MH), as a handoff, according to an SRNC relocation procedure (see pg. 439, left column, lines 16-41; pg. 442, left column, lines 13-34, 47-53; Figs. 1 and 6), where the wireless network environment allows for the mobile host to communicate via a wireless link under control of base stations as the mobile host moves between cells in which the SRNC relocation procedure would be inherent.

Regarding **Claim 25**, the combination of Chen and Lee discloses every limitation claimed, as applied above (see claim 22), in addition Chen further discloses the method according to claim 22, wherein said radio network control unit (BS2) detects a start time and end time of the handoff according to an SRNC relocation procedure, and, when said cellular phone (MH) can establish communication according to mobile IP, notifies said cellular phone (MH) of the start time and end time of the handoff according to the mobile IP procedure (see pg. 442, left column, lines 29-34,47-51; Fig. 6), where the base station (BS1) establishes a connection to the mobile host to initiate the handing off of the mobile host to another base station (BS2) in which upon completion or end of the handoff the mobile host will be associated with only base station (BS2).

Regarding **Claim 27**, the combination of Chen and Lee discloses of the handoff method according to claim 22, wherein after a plurality of radio network control units (BS1) have accommodated said cellular phone (MH), a previous one of the plurality of radio network control units (BS1) assumes that an SRNC relocation procedure generated after a predetermined transfer of an authority to control the cellular phone (MH) is a handoff procedure, so as to detect the start time and end time of the handoff (see pg. 442, left column, lines 29-34,47-53; pg. 442, right column, lines 9-13; Fig. 6), where the mobile host (MH) moves from one base station (BS1) to another base station (BS2) to have the control changed between the base stations in which the SRNC relocation procedure would be inherent.

**Claim 16, 19, 21, and 23** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Chen et al.** (hereinafter Chen) ("**Some Mechanisms To Improve TCP/IP Performance Over**

**Wireless and Mobile Computing Environment”, July 04, 2000)** in view of **Lee (US 6,539,225 B1)** and **Malki et al. (hereinafter Malki) (US 2001/0046223 A1)**.

Regarding **Claim 16**, Chen discloses a method of performing a handoff when a mobile host (MH) which reads on the claimed “mobile terminal equipment” is moving from a base station (BS1) which reads on the claimed “previous foreign agent” to a base station (BS2) which reads on the claimed “new foreign agent” in a mobile IP network (see Figs. 1 and 6), the method comprising the steps of:

when starting a handoff additionally performing a regional registration of the mobile terminal equipment (MH) to a agent (e.g., home agent) performing bicasting (e.g., multicast) and buffering so as to doubly register an address of the mobile terminal equipment (MH) by the previous foreign agent (BS1) and the new foreign agent (BS2) (see pg. 442, left col., lines 18-38, 47-51; pg. 442, right col., lines 9-13; Fig. 6), where the mobile host (MH) has an established connection registered between both base stations (BS1, BS2) during handoff for the home agent to tunnel packets to the base stations (BS1, BS2);

determining whether or not an IP packet is of real-time traffic (e.g., real-time packet) when the agent (e.g., home agent) receives the IP packet destined for the mobile terminal equipment (MH) when the double registration (see pg. 440, left col., lines 33-48; pg. 441, left col., lines 27-28; pg. 442, left col., lines 42-62; Fig. 6), where the real-time traffic is routed to the mobile host while registered with both base stations in which the datagram has a bit field to indicate the packet is real-time packet,

bicasting (e.g., multicast) the IP packet of real-time traffic to both the previous foreign agent (BS1) and the new foreign agent (BS2) (see pg. 440, left col., lines 33-48; pg. 442, left

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col., lines 42-44; pg. 442, left col., line 59 - right col., line 15; pg. 444, left col., lines 4-8; Fig. 6), where packets that are the real-time traffic are multicasted, and

buffering the IP packet of non-real-time traffic to the agent (e.g., home agent) (see pg. 440, left col., lines 33-48; pg. 442, left col., lines 42-58; pg. 444, left col., lines 4-8; Fig. 6), where the packets of non-real-time traffic are buffered; and

when the IP packet of non-real-time traffic is buffered, transferring the IP packet of non-real-time traffic to the foreign agent (BS2) having the mobile terminal (MH) equipment by the agent (e.g., home agent) (see pg. 440, left col., lines 33-48; pg. 442, left col., lines 20-28, 42-58; pg. 444, left col., lines 4-8; Fig. 6), where the packets of non-real-time traffic are buffered in which packets for the mobile host (MH) are tunneled to the base station (BS2). Chen fails to disclose having the features when the handoff is completed, requesting updating of the regional registration to the home agent so as to perform the regional registration only for the new foreign agent; hierarchical mobile IP network. However, the examiner maintains that the feature when the handoff is completed, requesting updating of the regional registration to the agent so as to perform the regional registration only for the new foreign agent was well known in the art, as taught by Lee.

Lee further discloses the feature when the handoff is completed, requesting updating of the regional registration to the agent (26, e.g., home agent) so as to perform the regional registration only for the new foreign agent (34) (see col. 5, line 53 - col. 6, line 29; Figs. 1-2, 3 "ref. S6"), where the mobile wireless node (14) is deregistered from the old foreign agent (28) when handoff is completed.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Chen and Lee to have the feature when the handoff is completed, requesting updating of the regional registration to the home agent so as to perform the regional registration only for the new foreign agent, in order to provide seamless data network telecommunication service to a mobile wireless node during mobile wireless call handoff from a first radio base station to second radio base station, as taught by Lee (see col. 2, lines 34-39). The combination of Chen and Lee fails to disclose having the features hierarchical mobile IP network; gateway foreign agent. However, the examiner maintains that the features hierarchical mobile IP network; gateway foreign agent was well known in the art, as taught by Malki.

In the same field of endeavor, Malki discloses the features hierarchical mobile IP network (see pg. 3, [0031]; Fig. 3), where the mobile network provides an N-level tree hierarchy;

mobile anchor point (MAP, 375) which reads on the claimed "gateway foreign agent" (see pg. 3, [0030]; Fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Chen and Lee with Malki to have the features hierarchical mobile IP network; gateway foreign agent, in order to provide hierarchical mobility management for wireless networks, as taught by Malki (see pg. 2, 0013).

Regarding **Claim 19**, the combination of Chen and Lee discloses the limitations claimed, as applied above (see claim 16), in addition Chen further discloses the method



according to claim 16, wherein said home agent determines whether or not an IP packet destined for said mobile terminal equipment (MH) is of real-time traffic (1) based on information on a header of the IP packet (see pg. 441, left col., lines 25-29; pg. 442, left col., lines 20-27; Fig. 4), where the packet has a packet type field that indicates that the packet is a real-time packet. The combination of Chen and Lee fails to disclose having the feature gateway foreign agent. However, the examiner maintains that the feature gateway foreign agent was well known in the art, as taught by Malki.

Malki further discloses the feature mobile anchor point (MAP, 375) which reads on the claimed "gateway foreign agent" (see pg. 3, [0030-0031]; pg. 7, [0051]; Fig. 3), where the MAP (375) provides the mobile node (305) with an attachment and/or access to a foreign network which allows for the routing of packets.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Chen and Lee with Malki to have the feature gateway foreign agent, in order to provide hierarchical mobility management for wireless networks, as taught by Malki (see pg. 2, 0013).

Regarding **Claim 21**, the combination of Chen and Lee discloses the limitations claimed, as applied above (see claim 16), in addition Chen further discloses the method according to claim 16, wherein the agent (e.g., home agent) determines whether or not an IP packet destined for said mobile terminal equipment (MH) is of real-time traffic (1) based on information on a header of the IP packet, which is placed in a payload of the IP packet (see pg. 441, left col., lines 25-29; pg. 442, left col., lines 20-27; pg. 439, right col., lines 50-53; Figs. 2, 4), where the packet has a packet type field that indicates that the packet is a real-

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time packet. The combination of Chen and Lee fails to disclose having the feature gateway foreign agent. However, the examiner maintains that the feature gateway foreign agent was well known in the art, as taught by Malki.

Malki further discloses the feature mobile anchor point (MAP, 375) which reads on the claimed "gateway foreign agent" (see pg. 3, [0030-0031]; pg. 7, [0051]; Fig. 3), where the MAP (375) provides the mobile node (305) with an attachment and/or access to a foreign network which allows for the routing of packets.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Chen and Lee with Malki to have the feature gateway foreign agent, in order to provide hierarchical mobility management for wireless networks, as taught by Malki (see pg. 2, 0013).

Regarding **Claim 23**, the combination of Chen, Lee, and Malki discloses every limitation claimed, as applied above (see claim 16), in addition Chen further discloses the method according to claim 16, wherein said mobile IP network is a wireless network which reads on the claimed "cellular phone network" in accordance with Radio Access Network standards which can perform a mobile IP procedure, said mobile terminal equipment (MH) is a mobile host (MH) which reads on the claimed "cellular phone", and each of said new and the previous foreign agents (BS1, BS2) is a base station (BS1) which reads on the claimed "radio network control unit" that can give and receive an authority to control said cellular phone (MH), as a handoff, according to an SRNC relocation procedure (see pg. 439, left column, lines 16-41; pg. 442, left column, lines 13-34, 47-53; Figs. 1 and 6), where the wireless network environment allows for the mobile host to communicate via a wireless link

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under control of base stations as the mobile host moves between cells in which the SRNC relocation procedure would be inherent.

**Claim 17** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Chen et al.** (hereinafter Chen) ("**Some Mechanisms To Improve TCP/IP Performance Over Wireless and Mobile Computing Environment**", July 04, 2000) in view of **Lee (US 6,539,225 B1)** and **Applicant's admitted Prior Art** (hereinafter Prior Art) (Description of Prior Art).

Regarding **Claim 17**, Chen discloses a method of performing a handoff when a mobile host (MH) which reads on the claimed "mobile terminal equipment" is moving from a base station (BS1) which reads on the claimed "previous foreign agent" to a base station (BS2) which reads on the claimed "new foreign agent" in a mobile IP network (see Figs. 1 and 6), the method comprising the steps of:

when starting a handoff additionally performing a regional registration of the mobile terminal equipment (MH) to a home agent performing bicasting (e.g., multicast) and buffering so as to doubly register an address of the mobile terminal equipment (MH) by the previous foreign agent (BS1) and the new foreign agent (BS2) (see pg. 442, left col., lines 18-38, 47-51; pg. 442, right col., lines 9-13; Fig. 6), where the mobile host (MH) has an established connection registered between both base stations (BS1, BS2) during handoff for the home agent to tunnel packets to the base stations (BS1, BS2);

determining whether or not an IP packet is of real-time traffic (e.g., real-time packet) when the home agent receives the IP packet destined for the mobile terminal equipment (MH) when the double registration (see pg. 440, left col., lines 33-48; pg. 441, left col., lines

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27-28; pg. 442, left col., lines 42-62; Fig. 6), where the real-time traffic is routed to the mobile host while registered with both base stations in which the datagram has a bit field to indicate the packet is real-time packet,

bicasting (e.g., multicast) the IP packet of real-time traffic to both the previous foreign agent (BS1) and the new foreign agent (BS2) (see pg. 440, left col., lines 33-48; pg. 442, left col., lines 42-44; pg. 442, left col., line 59 - right col., line 15; pg. 444, left col., lines 4-8; Fig. 6), where packets that are the real-time traffic are multicasted,

transferring the IP packet of non-real-time traffic to the previous foreign agent (BS1) (see pg. 440, left col., lines 33-48; pg. 442, left col., lines 42-58; pg. 444, left col., lines 4-8; Fig. 6), where the packets of non-real-time traffic are buffered in the base station's (BS1) buffers, and

buffering by the previous foreign agent (BS1) the IP packet of non-real-time traffic transferred from the home agent (see pg. 440, left col., lines 33-48; pg. 442, left col., lines 42-58; pg. 444, left col., lines 4-8; Fig. 6), where the packets of non-real-time traffic are buffered; and

and the IP packet of non-real-time traffic is buffered, transferring by the previous foreign agent (BS1) the IP packet of non-real-time traffic to the foreign agent (BS2) having the mobile terminal equipment (MH) (see pg. 440, left col., lines 33-48; pg. 442, left col., lines 20-28, 42-58; pg. 444, left col., lines 4-8; Fig. 6), where the packets of non-real-time traffic are buffered in which packets for the mobile host (MH) are tunneled to the base station (BS2). As a note, the new base station receives a registration reply from the home agent which indicates the mobile host is registered per se as part of the handoff completion

procedures. Chen fails to disclose having the features when the handoff is completed and the IP packet of non-real-time traffic is buffered; when the handoff is completed, requesting updating of the regional registration to the home agent so as to perform the regional registration only for the new foreign agent. However, the examiner maintains that the feature when the handoff is completed, requesting updating of the regional registration to the home agent so as to perform the regional registration only for the new foreign agent was well known in the art, as taught by Lee.

Lee further discloses the feature when the handoff is completed, requesting updating of the regional registration to the home agent (26) so as to perform the regional registration only for the new foreign agent (34) (see col. 5, line 53 - col. 6, line 29; Figs. 1-2, 3 "ref. S6"), where the mobile wireless node (14) is deregistered from the old foreign agent (28) when handoff is completed.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Chen and Lee to have the feature when the handoff is completed, requesting updating of the regional registration to the home agent so as to perform the regional registration only for the new foreign agent, in order to provide seamless data network telecommunication service to a mobile wireless node during mobile wireless call handoff from a first radio base station to second radio base station, as taught by Lee (see col. 2, lines 34-39). The combination of Chen and Lee fails to disclose having the feature when the handoff is completed and the IP packet of non-real-time traffic is buffered. However, the examiner maintains that the feature when the handoff is completed and the IP packet of non-real-time traffic is buffered was well known in the art, as taught by Prior Art.

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In the same field of endeavor, Prior Art discloses the feature when the handoff is completed and the IP packet of traffic is buffered (see pg. 6, lines 1-15; Figs. 17A-B), where the IP packets are buffered and forwarded.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Chen and Lee with Prior Art to have the feature when the handoff is completed and the IP packet of non-real-time traffic is buffered, in order to prevent packet loss during handoff, as taught by Prior Art (see pg. 5, line 6).

**Claim 24** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Chen et al.** (hereinafter Chen) ("**Some Mechanisms To Improve TCP/IP Performance Over Wireless and Mobile Computing Environment**", **July 04, 2000**) in view of **Lee (US 6,539,225 B1)** as applied to claim 22 above, and further in view of **Zhang et al.** (hereinafter Zhang) (**US 6,741,575 B1**).

Regarding **Claim 24**, the combination of Chen and Lee fails to disclose having the feature wherein said radio network control unit piggybacks a mobile IP message onto a control message according to the SRNC relocation procedure. However, the examiner maintains that the feature wherein said radio network control unit piggybacks a mobile IP message onto a control message according to the SRNC relocation procedure was well known in the art, as taught by Zhang.

In the same field of endeavor, Zhang discloses the feature wherein said radio port controller unit (106) which reads on the claimed "radio network control unit" piggybacks a

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mobile IP message onto a control message according to the SRNC relocation procedure (see col. 10, lines 47-62; Figs. 1, 3, 5A-B, 8B).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Chen and Lee with Zhang to have the feature wherein said radio network control unit piggybacks a mobile IP message onto a control message according to the SRNC relocation procedure, in order to provide a network architecture and a set of design guidelines for achieving seamless integration of cellular networks with the global Internet by supporting mobile and multicast IP services in cellular networks, as taught by Zhang (see col. 4, lines 3-7).

**Claim 26** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Chen et al.** (hereinafter Chen) ("**Some Mechanisms To Improve TCP/IP Performance Over Wireless and Mobile Computing Environment**", July 04, 2000) in view of **Lee (US 6,539,225 B1)** as applied to claim 22 above, and further in view of **Boudreaux (US 6,466,556 B1)**.

Regarding **Claim 26**, the combination of Chen and Lee discloses every limitation claimed, as applied above (see claim 22), in addition Chen further discloses wherein said radio network control unit (BS1) detects a start time and end time of the handoff according to an SRNC relocation procedure (see pg. 442, left column, lines 28-33, 47-53; pg. 442, right column, lines 9-13; Fig. 6), where the mobile host (MH) is in the process of starting handover from one base station (BS1) and another base station (BS2) and end when handoff is completed in which the mobile host is registered to a base station. The combination of Chen and Lee fails to disclose having the feature when the cellular phone cannot establish

communication according to mobile IP, notifies the cellular of the start time and end time of the handoff according to the SRNC relocation procedure. However, the examiner maintains that the feature when the cellular phone cannot establish communication according to mobile IP, notifies the cellular of the start time and end time of the handoff according to the SRNC relocation procedure was well known in the art, as taught by Boudreaux.

In the same field of endeavor, Boudreaux teaches having the feature when the user equipment (140) which reads on the claimed "cellular phone" cannot establish communication according to mobile IP, notifies the cellular phone of the start time and end time of the handoff according to the SRNS relocation which reads on the claimed "SRNC relocation procedure" (see col. 5, lines 44-50; col. 5, line 59 - col. 6, line 10; col. 7, lines 4-13; Figs. 3-4), where the movement of the UE (140) operates according to SRNS relocation. The UE (140) does not have connectivity during the hard handover due to the break in the communication link in which the link is reconnected after break to another RNS to provide the UE with an established communication link.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Chen and Lee with Boudreaux to have the feature when the cellular phone cannot establish communication according to mobile IP, notifies the cellular of the start time and end time of the handoff according to the SRNC relocation procedure, in order to keep packets flowing for as long as possible during the handover procedure either with a very small interruption or no interruption of flow, as taught by Boudreaux (see col. 5, lines 15-25).



**Claims 28-29** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Chen et al.** (hereinafter Chen) ("**Some Mechanisms To Improve TCP/IP Performance Over Wireless and Mobile Computing Environment**", July 04, 2000) in view of **Malki et al.** (hereinafter Malki) (US 2001/0046223 A1) and **Applicant's admitted Prior Art** (hereinafter Prior Art) (Description of Prior Art).

Regarding **Claim 28**, Chen discloses an agent apparatus, performing as a home agent, for transferring IP packets destined for a mobile terminal equipment (MH) in a mobile IP network, to which mobile terminal equipment (MH) is moving (see pg. 442, left col., lines 20-27; Figs. 1 and 6), the apparatus comprising:

a means (e.g., home agent) for, upon receiving an IP packet destined for the mobile terminal equipment when the mobile terminal equipment (MH) is doubly registered during a handoff determining whether or not the IP packet is of real-time traffic (see pg. 440, left col., lines 33-48; pg. 441, left col., lines 27-28; pg. 442, left col., lines 42-62; Fig. 6), where the real-time traffic is routed to the mobile host while registered with both base stations in which the datagram has a bit field to indicate the packet is real-time packet;

a means (e.g., home agent) for bicasting (e.g., multicast) the IP packet to both the previous foreign agent (BS1) and the new foreign agent (BS2) if the IP packet is of real-time traffic (1), and for buffering the IP packet in its agent if the IP packet is of non-real-time traffic (0) (see pg. 440, left col., lines 33-48; pg. 442, left col., lines 42 - right col., line 15; pg. 444, left col., lines 4-8; Figs. 4 and 6), where packets that are the real-time traffic are multicasted and the packets of non-real-time traffic are buffered; and

a means (e.g., home agent, BS1) for, IP packets of non-real-time traffic (0) are buffered, transferring the buffered IP packets of non-real-time traffic (0) to the new foreign agent (BS2) having the mobile terminal equipment (MH) (see pg. 440, left col., lines 33-48; pg. 442, left col., lines 20-28, 42-58; pg. 444, left col., lines 4-8; Fig. 6), where the packets of non-real-time traffic are buffered in which packets for the mobile host (MH) are tunneled to the base station (BS2). As a note, the new base station receives a registration reply from the home agent which indicates the mobile host is registered per se as part of the handoff completion procedures. Chen fails to disclose having the features gateway foreign agent; when the handoff is completed and the IP packet of non-real-time traffic is buffered. However, the examiner maintains that the feature gateway foreign agent was well known in the art, as taught by Malki.

Malki further discloses the feature mobile anchor point (MAP, 375) which reads on the claimed "gateway foreign agent" (see pg. 3, [0030-0031]; pg. 7, [0051]; Fig. 3), where the MAP (375) provides the mobile node (305) with an attachment and/or access to a foreign network which allows for the routing of packets.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Chen and Lee with Malki to have the feature gateway foreign agent, in order to provide hierarchical mobility management for wireless networks, as taught by Malki (see pg. 2, 0013). The combination of Chen and Malki fails to disclose having the feature when the handoff is completed and the IP packet of non-real-time traffic is buffered. However, the examiner maintains that the feature when the

handoff is completed and the IP packet of non-real-time traffic is buffered was well known in the art, as taught by Prior Art.

Prior Art further discloses the feature when the handoff is completed and the IP packet of traffic is buffered (see pg. 6, lines 1-15; Figs. 17A-B), where the IP packets are buffered and forwarded.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Chen and Malki with Prior Art to have the feature when the handoff is completed and the IP packet of non-real-time traffic is buffered, in order to prevent packet loss during handoff, as taught by Prior Art (see pg. 5, line 6).

Regarding **Claim 29**, Chen discloses an agent apparatus, performing as a home agent, for transferring IP packets destined for a mobile terminal equipment (MH) in a mobile IP network, to which mobile terminal equipment (MH) is moving (see pg. 442, left col., lines 20-27; Figs. 1 and 6), the apparatus comprising:

a determining device (e.g., home agent) configured to, upon receiving an IP packet destined for the mobile terminal equipment (MH) when the mobile terminal equipment (MH) is doubly registered during a handoff, determine whether or not the IP packet is of real-time traffic (1) (see pg. 440, left col., lines 33-48; pg. 441, left col., lines 27-28; pg. 442, left col., lines 42-62; Fig. 6), where the real-time traffic is routed to the mobile host while registered with both base stations in which the datagram has a bit field to indicate the packet is real-time packet;

a bicasting device (e.g., home agent) configured to bicast (e.g., multicast) the IP packet to both the previous foreign agent (BS1) and the new foreign agent (BS2) if the IP packet is of real-time traffic (1) (see pg. 440, left col., lines 33-48; pg. 442, left col., lines 42 - right col., line 15; pg. 444, left col., lines 4-8; Figs. 4 and 6), where packets that are the real-time traffic are multicasted; and

a buffer (e.g., sending and receiving buffer) configured to buffering the IP packet in its agent if the IP packet is of non-real-time traffic (0) (see pg. 440, left col., lines 33-48; pg. 442, left col., lines 42 - right col., line 15; pg. 444, left col., lines 4-8; Figs. 4 and 6), where the packets of non-real-time traffic are buffered; and

a transfer device (e.g., home agent, BS1) configured to, IP packets of non-real-time traffic (0) are buffered, transfer the buffered IP packets of non-real-time traffic (0) to the new foreign agent (BS2) having the mobile terminal equipment (MH) (see pg. 440, left col., lines 33-48; pg. 442, left col., lines 20-28, 42-58; pg. 444, left col., lines 4-8; Fig. 6), where the packets of non-real-time traffic are buffered in which packets for the mobile host (MH) are tunneled to the base station (BS2). As a note, the new base station receives a registration reply from the home agent which indicates the mobile host is registered per se as part of the handoff completion procedures. Chen fails to disclose having the features gateway foreign agent; when the handoff is completed and the IP packet of non-real-time traffic is buffered. However, the examiner maintains that the feature gateway foreign agent was well known in the art, as taught by Malki.

Malki further discloses the feature mobile anchor point (MAP, 375) which reads on the claimed "gateway foreign agent" (see pg. 3, [0030-0031]; pg. 7, [0051]; Fig. 3), where

the MAP (375) provides the mobile node (305) with an attachment and/or access to a foreign network which allows for the routing of packets.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Chen and Lee with Malki to have the feature gateway foreign agent, in order to provide hierarchical mobility management for wireless networks, as taught by Malki (see pg. 2, 0013). The combination of Chen and Malki fails to disclose having the feature when the handoff is completed and the IP packet of non-real-time traffic is buffered. However, the examiner maintains that the feature when the handoff is completed and the IP packet of non-real-time traffic is buffered was well known in the art, as taught by Prior Art.

Prior Art further discloses the feature when the handoff is completed and the IP packet of traffic is buffered (see pg. 6, lines 1-15; Figs. 17A-B), where the IP packets are buffered and forwarded.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Chen and Malki with Prior Art to have the feature when the handoff is completed and the IP packet of non-real-time traffic is buffered, in order to prevent packet loss during handoff, as taught by Prior Art (see pg. 5, line 6).

***Response to Arguments***

13. Applicant's arguments with respect to claims 15-29 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
- a. Kondylis et al. (US 6,621,805 B1) discloses a *Method and Apparatus for Multicasting Real-Time Variable Bit-Rate Traffic In Wireless Ad-Hoc Networks*.
  - b. Sen et al. (US 6,701,149 B1) discloses the *Handoff Framework to Support Real-Time Delay-Critical Services In a Next Generation Network*.
  - c. 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Manifestations of handover and SRNS Relocation (3G TR 25.932 version 3.0.0); pp. 1-13.
  - d. Banh et al., *Handover Re-routing Schemes for Connection Oriented Services in Mobile ATM Networks*, 1998.
  - e. Sato (US 6,553,015 B1) discloses *High Speed Switching of Communications Links Without Interrupting ATM Cell Traffic*.
  - f. Sato et al. (US 6,839,329 B1) discloses *Cell Flow Synchronization Establishing System of Wireless ATM Access System*.

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15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Willie J. Daniel, Jr. whose telephone number is (571) 272-7907. The examiner can normally be reached on 7:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha D. Banks-Harold can be reached on (571) 272-7905. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

WJD,JR  
06 July 2005

*Marsha D Banks-Harold*  
MARSHA D. BANKS-HAROLD  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600